



**Quarterly Progress Report**

**Grant #7310006**

**Arctic Thermal Shutters and Doors**

**Arctic Sun, LLC**

**January 1, 2013 through April 15, 2013**

**Deliverables Submitted:** No deliverables submitted.

**Budget:** No invoices were submitted for reimbursement during this reporting period. A small amount of money was expended on labor and a few supplies for prototype testing. A summary spreadsheet is attached. Additionally, a few shop supplies were utilized in fabricating test models.

**Schedule Status:** The original schedule for this grant was to start in September 2012 and then work intensively on the project throughout the winter when Arctic Sun's activity level is slower. Even though the grant's "Period of Performance" is listed as August 31, 2012 to April 30, 2014, we did not receive the signed agreement until mid-February 2013. This has made the early part of the schedule a little more challenging to meet, but we are within days of being on schedule. We should be able to complete the Milestones as indicated in the table in the contract.

**Percent Complete:**

Task	Start Date	End Date	Deliverables	Percent Complete
Complete ridged shutter and door design	Jan 2013	April 2013	Design Plans	65%
Complete Blown-in shutter design	Jan 2013	May 2013	Design Plans	45%
Develop plans for testing box and project instrumentation	Jan 2013	May 2013	Testing box design and performance monitoring plans	55%

**Work Progress:**

**Task 1. Ridged shutter and door design;** We conducted several think-tank design meetings with interdisciplinary staff, and made enough progress on the design to begin focusing on specific component options. Staff has been researching local suppliers, catalogs and on-line dealers to locate cost effective sources for quality parts.

The reversible drive motor for the ridged shutter has been the most challenging item to source. The final decision was to utilize a BC 2000 Worm Gear Motor from Mini Motor USA, Inc. Staff started to assemble individual components to verify function as designed. Current progress drawings are attached, as well as photos of shutter design weather-strip and track test models.

We are testing the last couple of specific hinge options for the doors to evaluate the best fit and function with our double-rabbeted edges.

**Task 2. Blown-in shutter design;** The design team is finalizing the preliminary design and beginning to source potential components to compare compatibility and functionality with other components.

**Task 3. Develop plans for testing box and project instrumentation;** Plans and specifications for the testing box design and location are being drawn up. Instrumentation, as per suggestions from ACEP, is being sourced and compatibility is being checked.

**Future Work:** Staff will continue to assemble components, and test their suitability for the final designs for all three tasks. After final designs are approved, staff will begin construction of the test box and start procuring the materials for the production of test shutters and doors. We are not anticipating any significant problems with this phase.



Roller Assembly



Shutter -Side

